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| 10/665,680 | 09/19/2003 | Kendra Gallup | 10030768-1 | 6256 |
| 57299 | 7590 | 08/06/2008 | EXAMINER | |
| Kathy Manke | | | CHIEF, DINH D | |
| Avago Technologies Limited | | | ART UNIT | |
| 4380 Ziegler Road | | | PAPER NUMBER | |
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary

Application No.

10/665,680

Applicant(s)

GALLUP ET AL.

Examiner

ERIN D. CHIEM

Art Unit

2883

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 April 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SF/ICE)
Paper No(s)/Mail Date See Continuation Sheet
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :3/14/08 2/8/08
10/29/07 3/14/08 630/08 .

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 3-10, 12-14, 17, 18, and 20 are rejected under 35 U.S.C. 102(e) as being anticipated by Althaus (US Patent 6,731,882 “Althaus”).

Regarding claims 1, 10, 14, 18, and 20 Althaus discloses a device comprising: a sub-mount (1) containing conductive traces exposed (23, 21) at a first surface of the sub-mount (Figure 1); a die (11) mounted on the sub-mount and containing an edge-emitting laser (12) that is electrically coupled to the conductive traces (23 and 21); and a reflector (7) positioned to reflect an optical signal from the edge-emitting laser through the first surface and through the sub-mount (11).

Regarding claim 3, the device further comprising a lens in the path of the optical signal and the first surface (15).

Regarding claim 4, wherein the lens is integrated in the sub-mount along the path of the optical signal (Figure 1: [15]).

Regarding claim 5, wherein the lens comprises a diffractive optical element (16).

Regarding claims 6 and 17 wherein the reflector comprises a portion of an inner wall (sidewalls 6) of a cavity (wherein the optical path 9 follows) in a cap (6) overlying the die (11).

Regarding claims 7 and 12 wherein the cap (6) attaches to the sub-mount (1) to hermetically seal the die in the cavity (Figure 1).

Regarding claim 8, Althaus teaches the device of Claim 1, further comprising a transparent encapsulant attached to the sub-mount and encasing the die (2).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 9 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Althaus in view of Kilian et al. (US 2004/0190836 “Freeman”).

Althaus teaches the device of Claim 1, Althaus does not teach wherein the encapsulate is made of silicone. Kilian does teach wherein the encapsulate comprises silicone [0029]. A motivation for such an application is because silicone is well known material that is readily available in the semiconductor industry in which will reduce cost and streamline manufacturing of the device. Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to apply the teachings of Kilian to the device of Althaus to reduce the cost and streamline manufacturing of the optical device.

Claims 2, 11, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Althaus in view of Freeman et al. (US 5,195,156 "Freeman").

Althaus discloses a device comprising: a sub-mount (1) containing conductive traces exposed (23 and 21) at a first surface of the sub-mount (Figure 1); a die (11) mounted on the sub-mount (1) and containing an edge-emitting laser (12) that is electrically coupled to the conductive traces (21, 23); and a reflector (7) positioned to reflect an optical signal from the edge-emitting laser through the first surface and through the sub-mount (1).

However, Althaus does not teach an alignment post attached to the sub-mount where the optical signal emerges from the sub-mount.

Freeman discloses an optical fiber connector assembly, which employs a laser emitting diodes formed on a semiconductor wafer, similar to one taught by Althaus. The laser diode is mounted in a package 103, shown in Fig. 1, and Freeman further teaches an alignment post 200 which act as a passive alignment tool to direct the emitting light from the laser diode in the package 103 to be transmitted to the desired destination. **A motivation** to use alignment structure is disclosed by Freeman to increase alignment accuracy of the optical device. Hence the post is use for aligning purposes.

Since Freeman et al. and Althaus are both from the same field of endeavor, the purpose disclosed by Freeman et al. would have been recognized in the pertinent art of Althaus

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to provide an alignment method such as the alignment posts taught by Freeman et al. such that the invented optical device may allow light to be coupled into the device

or perhaps made available for light to be coupled out such that the signal maybe transmitted out. The alignment post as taught by Freeman et al. allows the optical device to easily align the optical signal being transmitted by the fiber into another device which has means to accept the alignment posts made with specific alignment parameters.

Claims 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Althaus and Mizutani et al. (US 5822352 “Mizutani” hereinafter).

In teaching the apparatus, Althaus also teaches the process limitations of electrically connecting a laser to a sub-mount and attaching a reflector such that the optical signal is reflected through the sub-mount (Figure 1). However, Althaus does not expressly teach electrically connecting the laser comprises connecting a plurality of lasers to a sub-mount wafer that includes the sub-mount and furthermore, cutting the sub-mount wafer to separate sub-mount from similar sub-mounts.

Mizutani teaches an optoelectronic apparatus having laser structures grown by a crystal growth on to the wafer (col. 13, line 53-55). And furthermore the crystal growth method teach by Mizutani is also commonly used in the semiconductor art for cost effective method of forming transistors, in this case optoelectronic devices, all on the safe wafer and further cut the separately grown components on the wafers into separate parts. **A motivation** for such an application is found in the prior art reference to Mizutani wherein Mizutani teaches the number of process steps wherein the wafer is exposed to atmosphere is reduced and in which its threshold is further lowered and maximum output and maximum oscillation temperature are improved hence allow the finished product to be a more refine with better thermal stability.

Since Mizutani and Althaus are both from the same field of endeavor, the purpose disclosed by Mizutani would have been recognized in the pertinent art of Althaus.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to apply the method used to produce semiconductors, crystal growth on same wafer, for the making of an optoelectronic device since the material used are semiconductor material and have the same characteristics of semiconductor components. Such methods have been found to be cost effective for mass production.

Response to Arguments

Applicant's only arguments are:

- Kilian fails to disclose a structure that directs an optical signal passes through a surface on which traces of a sub-mount are exposed.
- Killian fails to disclose the invention of claim 10.
- 35 USC 103 (a) rejection motivation are mere hindsight reasoning.

Examiner's responses are:

- The Prior art to Kilian has been withdrawn. The examiner has found the applicant arguments to be persuasive. Hence new grounds of rejection are established in view of the prior art to Althaus. Claim 10 is also rejected over Althaus with newly detailed grounds of rejection as outlined above.

- The examiner has further clarify the motivation of which are detailed from the references themselves.

Examiner has addressed all of the relevant arguments and maintains the rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Erin D. Chiem whose telephone number is (571) 272-3102. The examiner can normally be reached on Monday - Thursday 9AM - 5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank G. Font can be reached on (571) 272-2415. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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| /Erin D Chiem/ Patent Examiner, Art Unit 2883 | /Frank G Font/ Supervisory Patent Examiner, Art Unit 2883 |
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